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EXAMINER	
SAWAGED, SARI S	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/676,708	DENG ET AL.	
	Examiner	Art Unit	
	SARI SAWAGED	2423	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 1008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-8,10,14-17,21-24,26,30-32 and 38-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 5-8, 10, 14-17, 21-24, 26, 30-32, 38-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/13/2008 has been entered.

Response to Arguments

1. Applicant's arguments with respect to claim 1, 5-8, 10, 14-17, 21-24, 26, 30-32, 38-47 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 5, 17, 23, 38, 40, 41, 44, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grobe et al. (hereinafter referred to as Grobe) (Optical metropolitan DWDM networks – an overview) (of record) in view of Safar (Mapping SMPTE 259 into ATM structure, May 15th, 2001) in

further view of Noritomi (US Pat. No. 5,805,764) in even further view of Peng (Us Pub. No. 2003/0100958).

Claims 1:

Grobe discloses inserting a serial video data stream (SMPTE 259M, see Table 1 on page 29) into a network transport digital signal (GFP-T frames, see page 31) formatted in accordance with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35).

Grobe also discloses a payload header being computed which includes a 2-byte CRC value associated with the payload since this is inherent to GFP as is dictated by the GFP standard. The header is computed in the sense that a CRC value must be computed for the payload. (See Fig. 6-4 and sections 6.1.2.1.2 and 6.1.2.1.4 in the ITU-T G.7041/Y.1303 NPL that was submitted by the applicant in IDS 6/17/2004).

Grobe's disclosure reads on the claim limitation "computing- a payload header of N bytes for each data payload, where N is a provisionable value, including an associated two byte CRC value; forming GFP-T frames with data payloads and corresponding payload headers; and mapping said GFP-T frames into said network transport digital signal in accordance with said hierarchical digital transmission standard"

Grobe, however doesn't disclose "segmenting said serial video data stream into a sequence of horizontal scan lines, extracting bits from the sequence of horizontal scan lines to form data payloads, or that the payload header includes a two byte time stamp counter value" *(The examiner understands that when the applicant states "extracting bits from said of horizontal scan lines to form data payloads", the applicant is referring to "embodiments of the present invention may remove EAV and SAV framing bytes that SDI employs to delineate horizontal scan lines that identify vertical blanking intervals. This would reduce the byte total." (See page 9 of the specification)).*

Safar, an inventor from the same or a similar field, discloses mapping SDI video into an ATM structure, wherein the SAV and EAV sections are not transmitted at the transmitter since they are redundant (see "Redundant SMPTE 259 bit space" page 9 and "shaded EAV and SAV region" in the figure on page10 with "Note: **shaded area not transmitted**" at bottom of page 10). Further Safar discloses **that the EAV, SAV can be reproduced at the receiver, even when not transmitted by the transmitter**, if **frame timing information** is provided to the receiver (see page 9). Safar's disclosure reads on the claim limitation "extracting bits from the sequence of horizontal scan lines to form data payloads" since the EAV and the SAV bits are extracted before forming the ATM cell payloads shown in the figure on page 14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Grobe with "extracting bits from the sequence of horizontal scan lines to form data payloads"

for the benefit of saving transmission bandwidth by not transmitting redundant data.

Neither Grobe nor Safar disclose “segmenting said serial video data stream into a sequence of horizontal scan lines” or that “the payload header includes a two byte time stamp counter value”.

Noritomi, an inventor from the same or a similar field, discloses transmitting “fixed length data packets having a first data portion including the video data for each horizontal line’s worth of the video data” (see col. 2 ll. 27-40), wherein the video data is SDI video data (see col. 6 ll. 28-32). The SDI video stream disclosed by Noritomi would have been inherently segmented into a sequence of horizontal scan lines before being encapsulated into “fixed length data packets” since each horizontal line’s worth of video/audio data is encapsulated in a packet(s). Moreover, Grobe discloses that “client signal bytes are mapped in GFP frames of constant length” in the GFP-T mode (see P. 31 ll.8-40) the SDI video stream would have been inherently segmented into a sequence of horizontal scan lines, wherein the size of “the sequence” (e.g. the length/size of the number of horizontal scan lines per GFP-T frame) would be dependent on the fixed length/size of the GFP-T frame (e.g. how many scan lines fit in a GFP-T frame).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Grobe and Safar to segment "said serial video data stream into a sequence of horizontal scan lines" according to Noritomi for the benefit of enabling the serial data stream disclosed to be encapsulated into a container for transmission over a variety of different networks.

Safar discloses in the scenario that EAV and SAV data are removed from the payload, the EAV and SAV can be reproduced at the receiver end if "frame timing information is provided" (see Safar page 9). Safar however doesn't disclose how this "frame timing information" is provided to the receiver end (e.g. how the frame timing information is supplied from the transmitter to the receiver (if the "time stamp counter value" is in the header)).

Neither Grobe nor Safar nor Noritomi disclose "the payload header includes a two byte time stamp counter value".

Peng, an inventor from the same or a similar field, discloses a time-stamp counter value in the payload header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data (see "sequence 64" in Fig. 3; and "each transfer unit is defined with a frame structure comprising…iii) a sequence number field" in [0021]; and "in some embodiments each sequence number field is further comprised of **a time-stamp field**, the time stamp field containing **a**

value indicating the time a particular transfer unit was transmitted" [0026]; "The TU framing structure 61 (shown in Fig. 3) complies with the Generic Framing Procedure (GFP)…" [0099]; and "to facilitate re-assembly of data…" [0071]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of the method of Grobe, Safar, and Noritomi to include a time stamp counter value of the payload header of the GFP-T frame for the benefit of facilitating the reassembly of the transmitted data at the receiver, as disclosed by Peng.

Claim 5:

Grobe, Safar, Noritomi, and Peng disclose the method of claim 1 as discussed previously.

Further, Grobe discloses wherein said serial video data stream comprises an ANSI/SMPTE 259M- 1997 serial video data stream (see "SMPTE 259M" in Table 1 on page 29).

Claim 17:

Grobe discloses an apparatus ("WDM system" see page 28) for inserting a serial video data stream (SMPTE 259M, see Table 1 on page 29) into a network transport digital signal (GFP-T frames, see page 31) formatted in accordance with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35).

Grobe also discloses a payload header being computed which includes a 2-byte CRC value associated with the payload since this is inherent to GFP as is dictated by the GFP standard. The header is computed in the sense that a CRC value must be computed for the payload. ((See Fig. 6-4 and sections 6.1.2.1.2 and 6.1.2.1.4 in the ITU-T G.7041/Y.1303 NPL that was submitted by the applicant in IDS 6/17/2004). Grobe's disclosure inherently includes a mapper that formats payloads/payload header into GFP-T frames and maps said GFP-T frames into a digital signal in accordance with the hierarchical SONET/SDH transmission standard.

Grobe's disclosure also reads on the claim limitation "computes a payload header of N bytes for each data payload, where N is a provisionable value, including an associated two byte CRC value"

Grobe, however doesn't disclose "a scan line delineation block that segments said serial video data stream into a sequence of horizontal scan lines, extracts selected bits from the sequence of horizontal scan lines to form data payloads; a payload header including a time stamp counter value"

Safar, an inventor from the same or a similar field, discloses mapping SDI video into an ATM structure, wherein the SAV and EAV sections are not transmitted at the transmitter since they are redundant (see "Redundant SMPTE 259 bit space"

page 9 and “shaded EAV and SAV region” in the figure on page10 with “Note: **shaded area not transmitted**” at bottom of page 10). Further Safar discloses **that the EAV, SAV can be reproduced at the receiver, even when not transmitted by the transmitter**, if **frame timing information** is provided to the receiver (see page 9). Safar’s disclosure reads on the claim limitation “extracts selected bits from the sequence of horizontal scan lines to form data payloads” since the EAV and the SAV bits are extracted before forming the ATM cell payloads shown in the figure on page 14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe with “extracting bits from the sequence of horizontal scan lines to form data payloads” for the benefit of saving transmission bandwidth by not transmitting redundant data.

Safar discloses in the scenario that EAV and SAV data are removed from the payload, the EAV and SAV can be reproduced at the receiver end if “frame timing information is provided” (see Safar page 9). Safar however doesn’t disclose how this “frame timing information” is provided to the receiver end (e.g. if the “time stamp counter value” is in the header).

Neither Grobe nor Safar disclose “a scan line delineation block that segments said serial video data stream into a sequence of horizontal scan lines; a payload header including a time stamp counter value”

Noritomi, an inventor from the same or a similar field, discloses transmitting "fixed length data packets having a first data portion including the video data for each horizontal line's worth of the video data" (see col. 2 ll. 27-40), wherein the video data is SDI video data (see col. 6 ll. 28-32). The SDI video stream disclosed by Noritomi would have been inherently segmented into a sequence of horizontal scan lines before being encapsulated into "fixed length data packets" since each horizontal line's worth of video/audio data is encapsulated in a packet(s), which reads on the claim limitation, a scan line delineation block that segments said serial video data stream into a sequence of horizontal scan lines. Moreover, Grobe discloses that "client signal bytes are mapped in GFP frames of constant length" in the GFP-T mode (see P. 31 ll.8-40) the SDI video stream would have been segmented into a sequence of horizontal scan lines, wherein the size of "the sequence" (e.g. the length/size of the number of horizontal scan lines per GFP-T frame) would be dependent on the fixed length/size of the GFP-T frame (e.g. how many scan lines fit in a GFP-T frame).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe and Safar to segment "said serial video data stream into a sequence of horizontal scan lines" according to Noritomi for the benefit of enabling the serial data stream disclosed to be encapsulated into a container for transmission over a variety of different networks.

Neither Grobe nor Safar nor Noritomi disclose "a payload header including a time stamp counter value"

Peng, an inventor from the same or a similar field, discloses a time-stamp counter value in the payload header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data (see "sequence 64" in Fig. 3; and "each transfer unit is defined with a frame structure comprising…iii) a sequence number field" in [0021]; and "in some embodiments each sequence number field is further comprised of **a time-stamp field**, the time stamp field containing **a value** indicating the time a particular transfer unit was transmitted" [0026]; "The TU framing structure 61 (shown in Fig. 3) complies with the Generic Framing Procedure (GFP)…" [0099]; and "to facilitate re-assembly of data…" [0071]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of the method of Grobe, Safar, and Noritomi to include a time stamp counter value of the payload header of the GFP-T frame for the benefit of facilitating the reassembly of the transmitted data at the receiver, as disclosed by Peng.

Claim 23:

Grobe, Safar, Noritomi, and Peng disclose the apparatus of claim 17 as discussed previously.

Further, Grobe discloses wherein said serial video data stream comprises an ANSI/SMPTE 259M- 1997 serial video data stream (see “SMPTE 259M” in Table 1 on page 29).

Claim 38:

Grobe discloses an apparatus (“WDM system” see page 28) for inserting a serial video data stream (SMPTE 259M, see Table 1 on page 29) into a network transport digital signal (GFP-T frames, see page 31) formatted in accordance with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35).

Grobe also discloses a payload header being computed which includes a 2-byte CRC value associated with the payload since this is inherent to GFP as is dictated by the GFP standard. The header is computed in the sense that a CRC value must be computed for the payload. (See Fig. 6-4 and sections 6.1.2.1.2 and 6.1.2.1.4 in the ITU-T G.7041/Y.1303 NPL that was submitted by the applicant in IDS 6/17/2004).

Grobe’s disclosure of the WDM system performing the functions above reads on the claim limitations “means for computing a payload header of N bytes for each data payload, where N is a provisionable value, an associated two byte CRC value; means for forming GFP-T frames with said data payloads and corresponding payload headers; and means for mapping said GFP-T frames into

a network transport digital signal in accordance with said hierarchical digital transmission standard”

Grobe, however doesn’t disclose “means for segmenting said serial video data stream into a sequence of horizontal scan lines; means for extracting selected bits from said sequence of horizontal scan lines to form data payloads" or that the payload header includes a two byte time stamp counter value” *(The examiner understands that when the applicant states “means for extracting selected bits from said of horizontal scan lines to form data payloads”, the applicant is referring to “embodiments of the present invention may remove EAV and SAV framing bytes that SDI employs to delineate horizontal scan lines that identify vertical blanking intervals. This would reduce the byte total.” (See page 9 of the specification)).*

Safar, an inventor from the same or a similar field, discloses mapping SDI video into an ATM structure, wherein the SAV and EAV sections are not transmitted at the transmitter since they are redundant (see “Redundant SMPTE 259 bit space” page 9 and “shaded EAV and SAV region” in the figure on page10 with “Note: **shaded area not transmitted**” at bottom of page 10). Further Safar discloses **that the EAV, SAV can be reproduced at the receiver, even when not transmitted by the transmitter**, if **frame timing information** is provided to the receiver (see page 9). Safar’s disclosure reads on the claim limitation “means for extracting selected bits from said sequence of horizontal scan lines to form data

payloads" since the EAV and the SAV bits are extracted before forming the ATM cell payloads shown in the figure on page 14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Grobe with "means for extracting selected bits from said sequence of horizontal scan lines to form data payloads" for the benefit of saving transmission bandwidth by not transmitting redundant data.

Neither Grobe nor Safar disclose "means for segmenting said serial video data stream into a sequence of horizontal scan lines" or that "the payload header includes a two byte time stamp counter value".

Noritomi, an inventor from the same or a similar field, discloses transmitting "fixed length data packets having a first data portion including the video data for each horizontal line's worth of the video data" (see col. 2 ll. 27-40), wherein the video data is SDI video data (see col. 6 ll. 28-32). The SDI video stream disclosed by Noritomi would have been inherently segmented into a sequence of horizontal scan lines before being encapsulated into "fixed length data packets" since each horizontal line's worth of video/audio data is encapsulated in a packet(s). Moreover, Grobe discloses that "client signal bytes are mapped in GFP frames of constant length" in the GFP-T mode (see P. 31 ll.8-40) the SDI video stream would have been inherently segmented into a sequence of horizontal scan lines, wherein the size of "the sequence" (e.g. the length/size of the number of horizontal scan lines per GFP-T frame) would be dependent on

the fixed length/size of the GFP-T frame (e.g. how many scan lines fit in a GFP-T frame). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe and Safar to include a "means for segmenting said serial video data stream into a sequence of horizontal scan lines" according to Noritomi for the benefit of enabling the serial data stream disclosed to be encapsulated into a container for transmission over a variety of different networks.

Safar discloses in the scenario that EAV and SAV data are removed from the payload, the EAV and SAV can be reproduced at the receiver end if "frame timing information is provided" (see Safar page 9). Safar however doesn't disclose how this "frame timing information" is provided to the receiver end (e.g. how the frame timing information is supplied from the transmitter to the receiver (if the "time stamp counter value" is in the header)).

Neither Grobe nor Safar nor Noritomi disclose "the payload header includes a two byte time stamp counter value".

Peng, an inventor from the same or a similar field, discloses a time-stamp counter value in the payload header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data (see "sequence 64" in Fig. 3; and "each transfer unit is defined with a frame structure comprising…iii) a sequence number field" in [0021]; and "in some embodiments each sequence number field

is further comprised of **a time-stamp field**, the time stamp field containing **a value** indicating the time a particular transfer unit was transmitted" [0026]; "The TU framing structure 61 (shown in Fig. 3) complies with the Generic Framing Procedure (GFP)…" [0099]; and "to facilitate re-assembly of data…" [0071]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe, Safar, and Noritomi to include a time stamp counter value of the payload header of the GFP-T frame for the benefit of facilitating the reassembly of the transmitted data at the receiver, as disclosed by Peng.

Claim 40:

Grobe, Safar, Noritomi, and Peng disclose the method of claim 1, as discussed previously.

Further, Safar discloses wherein said extracting bits step comprises removing End of Active Video (EAV) and Start of Active Video (SAV) bytes from said sequence of horizontal scan lines (see "Redundant SMPTE 259 bit space" page 9 and "shaded EAV and SAV region" in the figure on page10 with "Note: **shaded area not transmitted**" at bottom of page 10)

Claim 41:

Grobe, Safar, Noritomi, and Peng disclose the method of claim 40, as discussed previously.

Further, the GFP standard discloses that the payload header of a GFP frame is a **variable length** area which can vary from 4 bytes to 64 bytes and includes “tHEC” which a 2-byte CRC (See Fig. 6-4 and sections 6.1.2.1.2 and 6.1.2.1.4 in the ITU-T G.7041/Y.1303 NPL that was submitted by the applicant in IDS 6/17/2004).. Further, Peng discloses a time-stamp counter value in the payload header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data (see “sequence 64” in Fig. 3; and “each transfer unit is defined with a frame structure comprising…iii) a sequence number field” in [0021]; and “in some embodiments each sequence number field is further comprised of **a time-stamp field**, the time stamp field containing **a value** indicating the time a particular transfer unit was transmitted” [0026]; “The TU framing structure 61 (shown in Fig. 3) complies with the Generic Framing Procedure (GFP)…” [0099]; and “to facilitate re-assembly of data…” [0071]).

Claim 44:

Grobe, Safar, Noritomi, and Peng disclose the apparatus of claim 17 including the scan line delineation block, as discussed previously.

Further, Safar discloses wherein said extracting bits step comprises removing End of Active Video (EAV) and Start of Active Video (SAV) bytes from said

sequence of horizontal scan lines (see “Redundant SMPTE 259 bit space” page 9 and “shaded EAV and SAV region” in the figure on page10 with “Note: **shaded area not transmitted**” at bottom of page 10)

Claim 45:

Grobe, Safar, Noritomi, and Peng disclose the apparatus of claim 17, as discussed previously.

Further, the GFP standard discloses that the payload header of a GFP frame is a **variable length** area which can vary from 4 bytes to 64 bytes and includes “tHEC” which a 2-byte CRC (See Fig. 6-4 and sections 6.1.2.1.2 and 6.1.2.1.4 in the ITU-T G.7041/Y.1303 NPL that was submitted by the applicant in IDS 6/17/2004).. Further, Peng discloses a time-stamp counter value in the payload header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data (see “sequence 64” in Fig. 3; and “each transfer unit is defined with a frame structure comprising…iii) a sequence number field” in [0021]; and “in some embodiments each sequence number field is further comprised of **a time-stamp field**, the time stamp field containing **a value** indicating the time a particular transfer unit was transmitted” [0026]; “The TU framing structure 61 (shown in Fig. 3) complies with the Generic Framing Procedure (GFP)…” [0099]; and “to facilitate re-assembly of data…” [0071]).

3. Claims 6, 7, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grobe in view of Safar in further view of Noritomi in even further view of Peng in even further view of Olsson et al. (hereinafter referred to as Olsson) (Virtual Concatenations + LCAS) (of record).

Claim 6:

Grobe, Safar, Noritomi, and Peng disclosed the method of claim 1 as discussed previously.

Grobe discloses inserting a serial video data stream (SMPTE 259M, see Table 1 on page 29) into a network transport digital signal (GFP-T frames, see page 31) formatted in accordance with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35).

Neither Grobe nor Safar nor Noritomi nor Peng disclose "wherein mapping comprises: mapping said GFP-T frames into a VC-3-6v virtual concatenation"

Olsson, an inventor from the same or a similar field, discloses several advantages to virtual concatenations, specifically, scalability, efficiency, compatibility, and resiliency. With the use of virtual concatenations, SONET pipes can be sized to match the desired data rate and avoid unnecessary waste. Virtually Concatenated channels are more easily routed through a network and eliminate stranded bandwidth. Virtual concatenations works across legacy

networks that do not support large contiguous channels (See pages 2 and 3). Further, the VC disclosed by Olsson include VC-3/SDH. It would have been obvious to modify the method of Grobe, Safar, Noritomi, and Peng to use virtual concatenations due to the advantages offered to the network as disclosed by Olsson.

Claim 7:

Grobe, Safar, Noritomi, and Peng disclosed the method of claim 1 as discussed previously.

Grobe discloses inserting a serial video data stream (SMPTE 259M, see Table 1 on page 29) into a network transport digital signal (GFP-T frames, see page 31) formatted in accordance with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35).

Neither Grobe nor Safar nor Noritomi nor Peng disclose “wherein mapping comprises: mapping said GFP-T frames into a VT3-6v virtual concatenation”

Olsson, an inventor from the same or a similar field, discloses several advantages to virtual concatenations, specifically, scalability, efficiency, compatibility, and resiliency. With the use of virtual concatenations, SONET pipes can be sized to match the desired data rate and avoid unnecessary waste. Virtually Concatenated channels are more easily routed through a network and

eliminate stranded bandwidth. Virtual concatenations works across legacy networks that do not support large contiguous channels (See pages 2 and 3). Further, the VC disclosed by Olsson include VT3/SONET. It would have been obvious to modify the method of Grobe, Safar, Noritomi, and Peng to use virtual concatenations due to the advantages offered to the network as disclosed by Olsson.

Claim 21:

Grobe, Safar, Noritomi, and Peng disclosed the apparatus of claim 1 as discussed previously.

Grobe discloses inserting a serial video data stream (SMPTE 259M, see Table 1 on page 29) into a network transport digital signal (GFP-T frames, see page 31) formatted in accordance with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35).

Neither Grobe nor Safar nor Noritomi nor Peng disclose "wherein said mapper maps said GFP-T frames into a VC-3-6v virtual concatenation"

Olsson, an inventor from the same or a similar field, discloses several advantages to virtual concatenations, specifically, scalability, efficiency, compatibility, and resiliency. With the use of virtual concatenations, SONET pipes can be sized to match the desired data rate and avoid unnecessary waste.

Virtually Concatenated channels are more easily routed through a network and eliminate stranded bandwidth. Virtual concatenations works across legacy networks that do not support large contiguous channels (See pages 2 and 3). Further, the VC disclosed by Olsson include VC-3/SDH. It would have been obvious to modify the apparatus of Grobe, Safar, Noritomi, and Peng to use virtual concatenations due to the advantages offered to the network as disclosed by Olsson.

Claim 22:

Grobe, Safar, Noritomi, and Peng disclosed the apparatus of claim 1 as discussed previously.

Grobe discloses inserting a serial video data stream (SMPTE 259M, see Table 1 on page 29) into a network transport digital signal (GFP-T frames, see page 31) formatted in accordance with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35).

Neither Grobe nor Safar nor Noritomi nor Peng disclose “wherein said mapper maps said GFP-T frames into a VT3-6v virtual concatenation”

Olsson, an inventor from the same or a similar field, discloses several advantages to virtual concatenations, specifically, scalability, efficiency, compatibility, and resiliency. With the use of virtual concatenations, SONET

pipes can be sized to match the desired data rate and avoid unnecessary waste. Virtually Concatenated channels are more easily routed through a network and eliminate stranded bandwidth. Virtual concatenations works across legacy networks that do not support large contiguous channels (See pages 2 and 3). Further, the VC disclosed by Olsson include VT3/SONET. It would have been obvious to modify the apparatus of Grobe, Safar, Noritomi, and Peng to use virtual concatenations due to the advantages offered to the network as disclosed by Olsson.

4. Claims 8, 14, 42, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grobe in view of Noritomi in further view of Safar in even further view of Peng in even further view of Suzuki (US Pat. No. 6,148,135).

Claim 8:

Grobe discloses a method for inserting (encapsulating) a serial video data stream (see “SMPTE 259M” in Table 1 on page 29) into a network transport digital signal (see “GFP-T” frames in page 31) formatted in accordance with a hierarchical digital transmission standard (see “SONET/SDH” in page 27, 35).

Grobe invention would inherently include demapping the GFP-T frames (GFP-T frames, see page 31) from a signal formatted with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35) at the receiver so as to retrieve the GFP-T frames;

Grobe's would also inherently include deencapsulating said GFP-T frames to obtain payload headers and data payloads and differentiating said payloads from said payload headers therein so as to reconstruct the serial video data encapsulated within the GFP-T frames at the transmitter.

Grobe discloses that "client signal bytes are mapped in GFP frames of constant length" in the GFP-T mode (see P. 31 ll.8-40). Grobe is silent as to how much data can be transported within the GFP-T frame of constant length (e.g. whether a single line, a plurality of lines, an entire frame, or a plurality of frames fit within one GFP-T frame). Therefore, Grobe doesn't disclose "forming horizontal scan lines of said serial video data stream from said data payloads".

Grobe doesn't disclose "forming horizontal scan lines of said serial video data stream from said data payloads, including inserting bytes into said data payloads" or "buffering said horizontal scan lines in a buffer; and recovering clock timing of said serial video data stream based on said horizontal scan lines from time-stamp counter values in said payload headers"

Noritomi, an inventor from the same or a similar field, discloses transmitting "fixed length data packets having a first data portion including the video data for each horizontal line's worth of the video data" (see col. 2 ll. 27-40), wherein the video data is SDI video data (see col. 6 ll. 28-32). The horizontal video data

encapsulated within the fixed length packets disclosed by Noritomi would have been inherently formed into horizontal scan lines from the payloads of the fixed length data packets because proper video playback of the serial video data stream would not be possible otherwise. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Grobe to form forming horizontal scan lines of said serial video data stream from said data payloads for the benefit of proper playback of the serial video data stream at the receiver.

Neither Grobe nor Noritomi disclose “inserting bytes into said data payloads” or “buffering said horizontal scan lines in a buffer; and recovering clock timing of said serial video data stream based on said horizontal scan lines from time-stamp counter values in said payload headers”

Safar, an inventor from the same or a similar field, discloses mapping SDI video into an ATM structure, wherein the SAV and EAV sections are not transmitted at the transmitter since they are redundant (see “Redundant SMPTE 259 bit space” page 9 and “shaded EAV and SAV region” in the figure on page10 with “Note: **shaded area not transmitted**” at bottom of page 10). Further Safar discloses **that the EAV, SAV can be reproduced at the receiver, even when not transmitted by the transmitter**, if **frame timing information** is provided to the receiver (see page 9). Safar’s disclosure reads on the claim limitation “inserting bytes into said data payloads (to form horizontal scan lines of the serial video

data stream)" since the EAV and the SAV bits are inserted back by the receiver into the transported data payloads. Further, Safar's disclosure reads on the claim limitation "recovering clock timing of said serial video data stream based on said horizontal scan lines from time stamp counter" since Safar discloses that frame timing information is needed to reproduce (insert) the EAV, SAV at the receiver. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Grobe and Norimoto with "inserting bytes into said data payloads" for the benefit of saving transmission bandwidth by not transmitting redundant data in a serial video stream as disclosed by Safar.

Neither Grobe nor Noritomi nor Safar disclose "buffering said horizontal scan lines in a buffer; or that the "time-stamp counter values" are "in said payload headers".

Peng, an inventor from the same or a similar field, discloses a time-stamp counter value in the header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data (see "sequence 64" in Fig. 3; and "in some embodiments each sequence number field is further comprised of **a time-stamp field**, the time stamp field containing **a value** indicating the time a particular transfer unit was transmitted" [0026]; "The TU framing structure 61 (shown in Fig. 3) complies with the Generic Framing Procedure (GFP)…" [0099]; and "to facilitate re-assembly of data…" [0071]). Peng's disclosure of "a value indicating

the time a particular transfer unit was transmitted" also reads on the claim limitation "recovering clock timing"

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of the method of Grobe, Noritomi, and Safar to include a time stamp counter value of the payload header of the GFP-T frame for the benefit of facilitating the reassembly of the transmitted data at the receiver, as disclosed by Peng.

Neither Grobe nor Noritomi nor Safar nor Peng disclose "buffering said horizontal scan lines in a buffer"

Suzuki, an inventor from the same or a similar field, discloses buffering received video data in a buffer before playback (see "video buffer memory 45" in col. 8 ll. 36-48 and fig. 4 item 45) .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Grobe, Noritomi, Safar, and Peng to ""buffering the horizontal scan lines in a buffer" according to Suzuki for the benefit of preventing video jitter/delay during playback.

Claim 14:

Grobe, Noritomi, Safar, Peng, and Suzuki disclose the method of claim 8, as discussed previously.

Further, Grobe discloses wherein said serial video data stream comprises an ANSI/SMPTE 259M- 1997 serial video data stream (see “SMPTE 259M” in Table 1 on page 29).

Claim 42:

Grobe, Noritomi, Safar, Peng, and Suzuki disclose the method of claim 8, as discussed previously.

Safar discloses mapping SDI video into an ATM structure, wherein the SAV and EAV sections are not transmitted at the transmitter since they are redundant (see “Redundant SMPTE 259 bit space” page 9 and “shaded EAV and SAV region” in the figure on page10 with “Note: **shaded area not transmitted**” at bottom of page 10). Further Safar discloses **that the EAV, SAV can be reproduced at the receiver, even when not transmitted by the transmitter**, if **frame timing information** is provided to the receiver (see page 9). Safar’s disclosure reads on the claim limitation “wherein said forming step comprises inserting End of Active Video (EAV) and Start of Active Video (SAV) bytes into said data payloads to form said sequence of horizontal scan lines” since the EAV and the SAV bits are inserted back by the receiver into the transported data payloads.

Claim 43:

Grobe, Noritomi, Safar, Peng, and Suzuki disclose the method of claim 8, as discussed previously.

Further, the GFP standard discloses that the payload header of a GFP frame is a **variable length** area which can vary from 4 bytes to 64 bytes and includes "tHEC" which a 2-byte CRC (See Fig. 6-4 and sections 6.1.2.1.2 and 6.1.2.1.4 in the ITU-T G.7041/Y.1303 NPL that was submitted by the applicant in IDS 6/17/2004). Further, Peng discloses a time-stamp counter value in the payload header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data (see "sequence 64" in Fig. 3; and "each transfer unit is defined with a frame structure comprising…iii) a sequence number field" in [0021]; and "in some embodiments each sequence number field is further comprised of **a time-stamp field**, the time stamp field containing **a value** indicating the time a particular transfer unit was transmitted" [0026]; "The TU framing structure 61 (shown in Fig. 3) complies with the Generic Framing Procedure (GFP)…" [0099]; and "to facilitate re-assembly of data…" [0071]).

5. Claims 10, 24, 26, 30, 39, 46, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grobe in view of Noritomi in further view of Safar in even further view of Peng in even further view of Suzuki in even further view of Nichols (Us Pat. No. 6,363,073).

Claim 10:

Grobe, Noritomi, Safar, Peng, and Suzuki disclose the method of claim 8, as discussed previously.

Peng discloses a time-stamp counter value in the header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data, wherein the time stamp field containing a value indicating the time a particular transfer unit was transmitted" [0026]. Peng's disclosure of "a value indicating the time a particular transfer unit was transmitted" also reads on the claim limitation "recovering clock timing".

Neither Grobe nor Noritomi nor Safar nor Peng nor Suzuki disclose "wherein recovering clock timing comprises: reading data out of said buffer in accordance with a locally generated clock; and varying frequency of said locally generated clock in accordance with occupancy of said buffer."

Nichols, an inventor from the same or a similar field, discloses reading out of a buffer 114 in accordance with a local service clock generated by a digital synthesis circuit (DDS 120) (see "the clock signal from direct digital synthesis circuit 120 controls the rate at which data is processed by the buffer 114… col. 4 ll. 56-67 and "to control direct digital synthesis circuit to generate a local clock signal" in col. 4 ll. 20-24). Nichols further discloses varying the frequency of the

locally generated clock in accordance to the occupancy of the buffer (see "buffer fill data to control direct digital synthesis circui120 col. 4 ll. 64-67.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Grobe, Noritomi, Safar, Peng, and Suzuki to read "data out of said buffer in accordance with a locally generated clock; and varying frequency of said locally generated clock in accordance with occupancy of said buffer" as disclosed by Nichols for the benefit of preventing buffer overflow/underflow, thus preventing data loss, as disclosed by Nichols (see "too low, the level of data in buffer 114 will increase....could overflow and data could be lost" col. 4 ll. 61-67).

Claim 24:

Grobe discloses and apparatus for inserting (encapsulating) a serial video data stream (see "SMPTE 259M" in Table 1 on page 29) into a network transport digital signal (see "GFP-T" frames in page 31) formatted in accordance with a hierarchical digital transmission standard (see "SONET/SDH" in page 27, 35).

Grobe's invention would inherently include a demapper at the receiving apparatus that demaps the GFP-T frames (see "GFP-T" frames in page 31) from said network digital signal formatted according to said hierarchical digital transmission standard (SONET/SDH disclosed by Grobe in Pgs. 27 and 35), deencapsulates said GFP-T frames to obtain data payloads and payload headers

therein, differentiates said data payloads from said payload headers so as to reconstruct the serial video data encapsulated within the GFP-T frames at the transmitter.

Grobe discloses that “client signal bytes are mapped in GFP frames of constant length” in the GFP-T mode (see P. 31 ll.8-40). Grobe is silent as to how much data can be transported within the GFP-T frame of constant length (e.g. whether a single line, a plurality of lines, an entire frame, or a plurality of frames fit within one GFP-T frame). Therefore, Grobe doesn’t disclose that his apparatus “forms horizontal scan lines of said serial video data stream from said data payloads”.

Grobe doesn’t disclose “forms horizontal scan lines of said serial video data stream from said data payloads, including the insertion of bytes into said data payloads” or “a buffer that stores said extracted horizontal scan lines, said serial video data stream being- clocked out of said buffer in accordance with said timing- recovered from time-stamp counter values in said payload headers; and a clock recovery system that recovers timing of said serial video stream”

Noritomi, an inventor from the same or a similar field, discloses transmitting “fixed length data packets having a first data portion including the video data for each horizontal line’s worth of the video data” (see col. 2 ll. 27-40), wherein the video data is SDI video data (see col. 6 ll. 28-32). The horizontal video data encapsulated within the fixed length packets disclosed by Noritomi would have

been inherently formed by the apparatus into horizontal scan lines from the payloads of the fixed length data packets because proper video playback of the serial video data stream would not be possible otherwise. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe to form forming horizontal scan lines of said serial video data stream from said data payloads for the benefit of proper playback of the serial video data stream at the receiver.

Neither Grobe nor Noritomi disclose “the insertion of bytes into said data payloads” or “a buffer that stores said extracted horizontal scan lines, said serial video data stream being- clocked out of said buffer in accordance with said timing- recovered from time-stamp counter values in said payload headers; and a clock recovery system that recovers timing of said serial video stream”

Safar, an inventor from the same or a similar field, discloses mapping SDI video into an ATM structure, wherein the SAV and EAV sections are not transmitted at the transmitter since they are redundant (see “Redundant SMPTE 259 bit space” page 9 and “shaded EAV and SAV region” in the figure on page10 with “Note: **shaded area not transmitted**” at bottom of page 10). Further Safar discloses **that the EAV, SAV can be reproduced at the receiver, even when not transmitted by the transmitter**, if **frame timing information** is provided to the receiver (see page 9). Safar’s disclosure reads on the claim limitation “including the insertion of bytes into said data payloads” (to form horizontal scan lines of the

serial video data stream)" since the EAV and the SAV bits are inserted back by the receiver into the transported data payloads. Further, Safar's disclosure reads on the claim limitation "a clock recovery system that recovers timing of said serial video stream" since Safar discloses that frame timing information is needed to reproduce (insert) the EAV, SAV at the receiver. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe and Norimoto with "the insertion of bytes into said data payloads" for the benefit of saving transmission bandwidth by not transmitting redundant data in a serial video stream as disclosed by Safar.

Neither Grobe nor Noritomi nor Safar disclose "a buffer that stores said extracted horizontal scan lines, said serial video data stream being- clocked out of said buffer in accordance with said timing- recovered from time-stamp counter values in said payload headers and a clock recovery system that recovers timing of said serial video stream"

Peng, an inventor from the same or a similar field, discloses a time-stamp counter value in the header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data (see "sequence 64" in Fig. 3; and "in some embodiments each sequence number field is further comprised of **a time-stamp field**, the time stamp field containing **a value** indicating the time a particular transfer unit was transmitted" [0026]; "The TU framing structure 61 (shown in Fig. 3) complies with the Generic Framing Procedure (GFP)..." [0099]; and "to

facilitate re-assembly of data…" [0071]). Peng's disclosure of "a value indicating the time a particular transfer unit was transmitted" reads on the claim limitation "timing- recovered from time-stamp counter values in said payload headers"

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of the method of Grobe, Noritomi, and Safar to include a time stamp counter value of the payload header of the GFP-T frame for the benefit of facilitating the reassembly of the transmitted data at the receiver, as disclosed by Peng.

Neither Grobe nor Noritomi nor Safar nor Peng disclose "a buffer that stores said extracted horizontal scan lines, said serial video data stream being- clocked out of said buffer in accordance with said timing" or "a clock recovery system that recovers timing of said serial video stream"

Suzuki, an inventor from the same or a similar field, discloses buffering received **video data** in a buffer before playback (see "video buffer memory 45" in col. 8 ll. 36-48 and fig. 4 item 45) .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe, Noritomi, Safar, and Peng to include "a buffer that stores said extracted horizontal scan lines " according to Suzuki for the benefit of preventing video jitter/delay during playback.

Neither Grobe nor Noritomi nor Safar nor Peng nor Suzuki disclose "said serial video data stream being- clocked out of said buffer in accordance with said timing- recovered from time-stamp counter values" or "a clock recovery system that recovers timing of said serial video stream"

Nichols, an inventor from the same or a similar field, discloses reading data out (data stream being clocked out) of a buffer 114 in accordance with a local service clock generated by a digital synthesis circuit (DDS 120) and in accordance with timing recovered from time stamp counter values (residual time stamp (RTS) values) (see "the clock signal from direct digital synthesis circuit 120 controls the rate at which data is processed by the buffer 114… col. 4 ll. 56-67 and "to control direct digital synthesis circuit to generate a local clock signal" in col. 4 ll. 20-24). Nichols further discloses varying the frequency of the locally generated clock in accordance to the occupancy of the buffer (see "buffer fill data to control direct digital synthesis circui120 col. 4 ll. 64-67). Nichols disclosure reads on clock recovery system that recovers timing of said serial video stream see "circuit for recovering a service clock at destination node 100" (col. 3 ll. 40-44 and Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe, Noritomi, Safar, Peng, and Suzuki to read "data out of said buffer in accordance with a locally generated clock; and varying frequency of said locally generated clock in accordance with

occupancy of said buffer" as disclosed by Nichols for the benefit of preventing buffer overflow/underflow, thus preventing data loss, as disclosed by Nichols (see "too low, the level of data in buffer 114 will increase....could overflow and data could be lost" col. 4 ll. 61-67).

Claim 26:

Grobe, Noritomi, Safar, Peng, Suzuki, and Nichols disclose the apparatus of claim 24, as discussed previously.

Nichols further discloses varying the frequency of the locally generated clock in accordance to the occupancy of the buffer (see "buffer fill data to control direct digital synthesis circui120 col. 4 ll. 64-67). Nichols invention would inherently have "a buffer occupancy measurement block" that measures occupancy of said buffer, said timing being adjusted in accordance with said measured occupancy.

Claim 30:

Grobe, Noritomi, Safar, Peng, Suzuki, and Nichols disclose the apparatus of claim 24, as discussed previously.

Further, Grobe discloses wherein said serial video data stream comprises an ANSI/SMPTE 259M- 1997 serial video data stream (see "SMPTE 259M" in Table 1 on page 29).

Claim 39:

Grobe discloses and apparatus for inserting (encapsulating) a serial video data stream (see "SMPTE 259M" in Table 1 on page 29) into a network transport digital signal (see "GFP-T" frames in page 31) formatted in accordance with a hierarchical digital transmission standard (see "SONET/SDH" in page 27, 35).

Grobe's invention would inherently include a demapper (means for demapping) GFP-T frames (see "GFP-T" frames in page 31) from said network digital signal formatted according to said hierarchical digital transmission standard (SONET/SDH disclosed by Grobe in Pgs. 27 and 35) and a means for deencapsulating said GFP-T frames to obtain data payloads and payload headers therein, means differentiates said data payloads from said payload headers so as to reconstruct the original serial video data encapsulated within the GFP-T frames at the transmitter.

Grobe discloses that "client signal bytes are mapped in GFP frames of constant length" in the GFP-T mode (see P. 31 ll.8-40). Grobe is silent as to how much data can be transported within the GFP-T frame of constant length (e.g. whether a single line, a plurality of lines, an entire frame, or a plurality of frames fit within one GFP-T frame). Therefore, Grobe doesn't disclose that his apparatus includes a "means for forming horizontal scan lines of said serial video data stream from said data payloads".

Grobe doesn't disclose " a means for forming horizontal scan lines of said serial video data stream from said data payloads, including means for insertion of bytes into said data payloads" or "means for buffering said horizontal scan lines in a buffer; and means for recovering clock timing of said serial video data stream based on said horizontal scan lines from time-stamp counter values in said payload headers."

Noritomi, an inventor from the same or a similar field, discloses transmitting "fixed length data packets having a first data portion including the video data for each horizontal line's worth of the video data" (see col. 2 ll. 27-40), wherein the video data is SDI video data (see col. 6 ll. 28-32). The horizontal video data encapsulated within the fixed length packets disclosed by Noritomi would have been inherently formed by the apparatus into horizontal scan lines from the payloads of the fixed length data packets because proper video playback of the serial video data stream would not be possible otherwise. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe to include a means for forming horizontal scan lines of said serial video data stream from said data payloads" for the benefit of proper playback of the serial video data stream at the receiver.

Neither Grobe nor Noritomi disclose "means for inserting bytes into said data payloads" or a "means for buffering said horizontal scan lines in a buffer; and

means for recovering clock timing of said serial video data stream based on said horizontal scan lines from time-stamp counter values in said payload headers."

Safar, an inventor from the same or a similar field, discloses mapping SDI video into an ATM structure, wherein the SAV and EAV sections are not transmitted at the transmitter since they are redundant (see "Redundant SMPTE 259 bit space" page 9 and "shaded EAV and SAV region" in the figure on page10 with "Note: **shaded area not transmitted**" at bottom of page 10). Further Safar discloses **that the EAV, SAV can be reproduced at the receiver, even when not transmitted by the transmitter**, if **frame timing information** is provided to the receiver (see page 9). Safar's disclosure reads on the claim limitation "means for inserting bytes into said data payloads" (to form horizontal scan lines of the serial video data stream) since the EAV and the SAV bits are inserted back by the receiver into the transported data payloads. Further, Safar's disclosure reads on the claim limitation "a clock recovery system that recovers timing of said serial video stream" since Safar discloses that frame timing information is needed to reproduce (insert) the EAV, SAV at the receiver. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe and Norimoto with "the insertion of bytes into said data payloads" for the benefit of saving transmission bandwidth by not transmitting redundant data in a serial video stream as disclosed by Safar.

Neither Grobe nor Noritomi nor Safar disclose “means for buffering said horizontal scan lines in a buffer; and means for recovering clock timing of said serial video data stream based on said horizontal scan lines from time-stamp counter values in said payload headers.”

Peng, an inventor from the same or a similar field, discloses a time-stamp counter value in the header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data (see “sequence 64” in Fig. 3; and “in some embodiments each sequence number field is further comprised of **a time-stamp field**, the time stamp field containing **a value** indicating the time a particular transfer unit was transmitted” [0026]; “The TU framing structure 61 (shown in Fig. 3) complies with the Generic Framing Procedure (GFP)…” [0099]; and “to facilitate re-assembly of data…” [0071]). Peng’s disclosure of “a value indicating the time a particular transfer unit was transmitted” reads on the claim limitation “time-stamp counter values in said payload headers”. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of the method of Grobe, Noritomi, and Safar to include “a time stamp counter value in the payload header” of the GFP-T frame for the benefit of facilitating the reassembly of the transmitted data at the receiver, as disclosed by Peng.

Neither Grobe nor Noritomi nor Safar nor Peng disclose ““means for buffering said horizontal scan lines in a buffer; and means for recovering clock timing of

said serial video data stream based on said horizontal scan lines from time-stamp counter values"

Suzuki, an inventor from the same or a similar field, discloses buffering received **video data** in a buffer before playback, which reads on the claim limitation "means for buffering said horizontal scan lines in a buffer" (see "video buffer memory 45" in col. 8 ll. 36-48 and fig. 4 item 45) .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe, Noritomi, Safar, and Peng to include "means for buffering said horizontal scan lines in a buffer" according to Suzuki for the benefit of preventing video jitter/delay during playback.

Neither Grobe nor Noritomi nor Safar nor Peng nor Suzuki disclose "means for recovering clock timing of said serial video data stream based on said horizontal scan lines from time-stamp counter values"

Nichols, an inventor from the same or a similar field, discloses reading data out (data stream being clocked out) of a buffer 114 in accordance with a local service clock generated by a digital synthesis circuit (DDS 120) and in accordance with timing recovered from time stamp counter values (residual time stamp (RTS) values) (see "the clock signal from direct digital synthesis circuit 120 controls the rate at which data is processed by the buffer 114… col. 4 ll. 56-67 and "to control

direct digital synthesis circuit to generate a local clock signal" in col. 4 ll. 20-24). Nichols further discloses varying the frequency of the locally generated clock in accordance to the occupancy of the buffer (see "buffer fill data to control direct digital synthesis circui120 col. 4 ll. 64-67). Nichols disclosure reads on "means for recovering clock timing of said serial video data stream based on said horizontal scan lines from time-stamp counter values" see "circuit for recovering a service clock at destination node 100" (col. 3 ll. 40-44 and Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Grobe, Noritomi, Safar, Peng, and Suzuki to include a "means for recovering clock timing of said serial video data stream based on said horizontal scan lines from time-stamp counter values" as disclosed by Nichols for the benefit of preventing buffer overflow/underflow, thus preventing data loss, as disclosed by Nichols (see "too low, the level of data in buffer 114 will increase....could overflow and data could be lost" col. 4 ll. 61-67 and col. 1 ll. 21-25).

Claim 46:

Grobe, Noritomi, Safar, Peng, Suzuki, and Nichols disclose the apparatus of claim 24 including a demapper, as discussed previously.

Further, Safar discloses **that the EAV, SAV can be reproduced at the receiver, even when not transmitted by the transmitter**, if **frame timing information** is provided to the receiver (see page 9).

Claim 47:

Grobe, Noritomi, Safar, Peng, Suzuki, and Nichols disclose the apparatus of claim 24 including a demapper, as discussed previously.

Further, the GFP standard discloses that the payload header of a GFP frame is a **variable length** area which can vary from 4 bytes to 64 bytes and includes "tHEC" which a 2-byte CRC (See Fig. 6-4 and sections 6.1.2.1.2 and 6.1.2.1.4 in the ITU-T G.7041/Y.1303 NPL that was submitted by the applicant in IDS 6/17/2004).. Further, Peng discloses a time-stamp counter value in the payload header portion of a GFP frame for the benefit of facilitating the re-assembly of transmitted data (see "sequence 64" in Fig. 3; and "each transfer unit is defined with a frame structure comprising…iii) a sequence number field" in [0021]; and "in some embodiments each sequence number field is further comprised of **a time-stamp field**, the time stamp field containing **a value** indicating the time a particular transfer unit was transmitted" [0026]; "The TU framing structure 61 (shown in Fig. 3) complies with the Generic Framing Procedure (GFP)…" [0099]; and "to facilitate re-assembly of data…" [0071]).

6. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grobe in view of Noritomi in further view of Safar in even further view of Peng in even further view of Suzuki in even further view of Olsson et al. (hereinafter referred to as Olsson) (Virtual Concatenations + LCAS) (of record).

Claim 15:

Grobe, Noritomi, Safar, Peng, and Suzuki disclose the method of claim 8, as discussed previously.

Grobe discloses inserting (encapsulating) a serial video data stream (see "SMPTE 259M" in Table 1 on page 29) into a network transport digital signal (see "GFP-T" frames in page 31) formatted in accordance with a hierarchical digital transmission standard (see "SONET/SDH" in page 27, 35).

Grobe invention would inherently include demapping the GFP-T frames (GFP-T frames, see page 31) from a signal formatted with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35) at the receiver so as to retrieve the GFP-T frames

Neither Grobe nor Safar nor Noritomi nor Peng nor Suzuki disclose "mapping/demapping GFP-T frames into a VC-3-6v virtual concatenation"

Olsson, an inventor from the same or a similar field, discloses several advantages to virtual concatenations, specifically, scalability, efficiency, compatibility, and resiliency. With the use of virtual concatenations, SONET pipes can be sized to match the desired data rate and avoid unnecessary waste. Virtually Concatenated channels are more easily routed through a network and eliminate stranded bandwidth. Virtual concatenations works across legacy networks that do not support large contiguous channels (See pages 2 and 3). Further, the VC disclosed by Olsson include VC-3/SDH. It would have been obvious to modify the method of Grobe, Noritomi, Safar, Peng, and Suzuki to map/demap the GFP-T frames in virtual concatenations due to the advantages offered to the network as disclosed by Olsson.

Claim 16:

Grobe, Noritomi, Safar, Peng, and Suzuki disclose the method of claim 8, as discussed previously.

Grobe discloses inserting (encapsulating) a serial video data stream (see "SMPTE 259M" in Table 1 on page 29) into a network transport digital signal (see "GFP-T" frames in page 31) formatted in accordance with a hierarchical digital transmission standard (see "SONET/SDH" in page 27, 35).

Grobe invention would inherently include demapping the GFP-T frames (GFP-T frames, see page 31) from a signal formatted with a hierarchical digital

transmission standard (SONET/SDH, see page 27, 35) at the receiver so as to retrieve the GFP-T frames

Neither Grobe nor Safar nor Noritomi nor Peng nor Suzuki disclose "mapping/demapping GFP-T frames into a VT3-6v virtual concatenation"

Olsson, an inventor from the same or a similar field, discloses several advantages to virtual concatenations, specifically, scalability, efficiency, compatibility, and resiliency. With the use of virtual concatenations, SONET pipes can be sized to match the desired data rate and avoid unnecessary waste. Virtually Concatenated channels are more easily routed through a network and eliminate stranded bandwidth. Virtual concatenations works across legacy networks that do not support large contiguous channels (See pages 2 and 3). Further, the VC disclosed by Olsson include VT3-6V/SONET. It would have been obvious to modify the method of Grobe, Noritomi, Safar, Peng, and Suzuki to map/demap the GFP-T frames in virtual concatenations due to the advantages offered to the network as disclosed by Olsson.

7. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grobe in view of Noritomi in further view of Safar in even further view of Peng in even further view of Suzuki in even further view of Nichols in even further view of Olsson et al. (hereinafter referred to as Olsson) (Virtual Concatenations + LCAS) (of record).

Claim 31:

Grobe, Noritomi, Safar, Peng, Suzuki, and Nichols disclose the apparatus of claim 24, as discussed previously.

Grobe discloses inserting a serial video data stream (SMPTE 259M, see Table 1 on page 29) into a network transport digital signal (GFP-T frames, see page 31) formatted in accordance with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35).

Neither Grobe nor Safar nor Noritomi nor Peng nor Suzuki nor Nihols disclose "wherein said demapper demaps said GFP packets from a VC-3-6v virtual concatenation"

Olsson, an inventor from the same or a similar field, discloses several advantages to virtual concatenations, specifically, scalability, efficiency, compatibility, and resiliency. With the use of virtual concatenations, SONET pipes can be sized to match the desired data rate and avoid unnecessary waste. Virtually Concatenated channels are more easily routed through a network and eliminate stranded bandwidth. Virtual concatenations works across legacy networks that do not support large contiguous channels (See pages 2 and 3). Further, the VC disclosed by Olsson include VC-3/SDH. It would have been obvious to modify the apparatus of Grobe, Safar, Noritomi, and Peng to use

virtual concatenations due to the advantages offered to the network as disclosed by Olsson.

Claim 32:

Grobe, Noritomi, Safar, Peng, Suzuki, and Nichols disclose the apparatus of claim 24, as discussed previously.

Grobe discloses inserting a serial video data stream (SMPTE 259M, see Table 1 on page 29) into a network transport digital signal (GFP-T frames, see page 31) formatted in accordance with a hierarchical digital transmission standard (SONET/SDH, see page 27, 35).

Neither Grobe nor Safar nor Noritomi nor Peng nor Suzuki nor Peng disclose "wherein said demapper demaps said GFP packets from a VT3-6v virtual concatenation"

Olsson, an inventor from the same or a similar field, discloses several advantages to virtual concatenations, specifically, scalability, efficiency, compatibility, and resiliency. With the use of virtual concatenations, SONET pipes can be sized to match the desired data rate and avoid unnecessary waste. Virtually Concatenated channels are more easily routed through a network and eliminate stranded bandwidth. Virtual concatenations works across legacy networks that do not support large contiguous channels (See pages 2 and 3).

Further, the VC disclosed by Olsson include VT3/SONET. It would have been obvious to modify the apparatus of Grobe, Safar, Noritomi, and Peng to use virtual concatenations due to the advantages offered to the network as disclosed by Olsson.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SARI SAWAGED whose telephone number is (571)270-5085. The examiner can normally be reached on Mon-Thurs, 9:00AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANDREW KOENIG can be reached on (571) 272-7296. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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